

Systems and Sustainability Analyses for New Photovoltaic Technologies

Professor Vasilis Fthenakis, Center for Life-Cycle Analysis, Earth and Environmental Engineering

Prof./Dr. Vasilis Fthenakis is world-known for his research at the interface of energy and the environment, with focus on photovoltaic (PV) technologies. He identified potential barriers in PV commercialization and proactively conducted research that resolved concerns associated with rapid growth of the PV market. By using life-cycle analysis (LCA) he brought equally balanced scrutiny to the nuclear and coal life-cycles; helping to put several energy technologies on a comparable basis with solar has been a crucial contribution to today's key debates about energy and climate change. His presentation at Drexel will ponder on sustainability metrics, e.g., resource availability, affordability, and environmental impact of evolving PV technologies in scenarios of high penetration in electricity grids.

Dr. Fthenakis is the Founding Director of the Center for Life Cycle Analysis at Columbia University, a professor of Earth and Environmental Engineering at Columbia, and a Senior Scientist Emeritus at Brookhaven National Laboratory.

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Fthenakis has degrees in Chemistry, Chemical Engineering, Fluid Dynamics and Atmospheric Science. He is the author of the book "Prevention and Control of Accidental Releases of Hazardous Gases" and the forthcoming "Solar Electricity: Systems Integration and Sustainability", editor of two books on Life Cycle Analysis, a book on "3rd Generation Photovoltaics", and author or co-author of about 400 scientific articles and reports. His peer-reviewed articles have been cited more than 7,000 times, he serves in the Editorial Boards of Progress in Photovoltaics, Energy Technology, and the Journal of Loss Prevention. He is a Fellow of the American Institute of Chemical Engineers and of the International Energy Foundation. Early on in his career he served as a safety and environmental consultant for major oil and chemical companies, and as an expert on investigating major chemical accidents in the U.S. His current research focuses on renewable energy systems integration, solar water desalination, and mining/mineral systems analysis.

